



(19)

Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 620 500 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
03.01.1996 Bulletin 1996/01

(51) Int. Cl.⁶: G03F 7/004, G03F 7/022,
G03F 7/008, G03F 7/039

(43) Date of publication A2:
19.10.1994 Bulletin 1994/42

(21) Application number: 94105635.0

(22) Date of filing: 12.04.1994

(84) Designated Contracting States:
DE FR GB IT

- Onozuka, Toshihiko
Ome-shi (JP)
- Shirai, Seiichirou
Hamura-shi (JP)
- Moriuchi, Noboru
Ome-shi (JP)
- Sasaki, Mamoru
Hitachi-shi (JP)
- Hashimoto, Michiaki
Sayama-shi (JP)
- Hayashi, Nobuaki
Hidaka-shi (JP)

(30) Priority: 16.04.1993 JP 89692/93

(71) Applicants:

- HITACHI, LTD.
Chiyoda-ku, Tokyo 101 (JP)
- Hitachi Chemical Co., Ltd.
Shinjuku-ku, Tokyo 160 (JP)

(72) Inventors:

- Uchino, Shoichi
Hachioji-shi (JP)
- Migitaka, Sonoko
Kokubunji-shi (JP)
- Ueno, Takumi
Hachioji-shi (JP)

(74) Representative: Strehl Schübel-Hopf Groening &
Partner
D-80538 München (DE)

(54) Resist and pattern formation using the same

(57) Herein is disclosed a resist which comprises a water repellent compound having a functional group of which water repellent ability disappears through a nucleophilic substitution reaction with alkali or at least two functional groups, in one molecule, of which water repellent ability disappears through a reaction with alkali, and a permeability-variable composition of which alkaline solution-permeability is changed by radiation exposure or radiation exposure and baking after radiation exposure, said resist being excellent in sensitivity to UV light, electron beam, X-ray and other radiations, high in resolution capability and developable with aqueous alkaline solution; as well as a pattern forming method using said resist.

EP 0 620 500 A3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 94 10 5635

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	US-A-4 250 247 (J. SANDER ET AL.) 10 February 1981 * column 7, line 13 - line 20; claim 1 * ---	1-27	G03F7/004 G03F7/022 G03F7/008 G03F7/039
X	EP-A-0 002 805 (BASF AG) 11 July 1979 * claims 1-3 * ---	1-5,8-27	
X	EP-A-0 022 571 (HOECHST AG) 21 January 1981 * column 17, line 29 - column 18, line 7; claim 1 * ---	1-27	
X	EP-A-0 132 867 (STAUFFER CHEMICAL COMPANY) 13 February 1985 * claim 1 * ---	1-5,8-27	
X	US-A-4 502 980 (P. DENISEVICH ET AL.) 5 March 1985 * column 9, line 44 * ---	28-30	
X	US-A-4 052 542 (YUNG-KANG WEI ET AL.) 4 October 1977 * column 3, line 50 * ---	28-30	TECHNICAL FIELDS SEARCHED (Int.Cl.5) G03F
X	US-A-4 249 013 (R. C. HADDON ET AL.) 3 February 1981 * column 2, line 47 - line 60 * ---	28-30	
X	EP-A-0 505 094 (3M COMPANY) 23 September 1992 * page 4, line 18 - line 34 * ---	1-5,8-27 -/-	
<p>The present search report has been drawn up for all claims</p>			
Place of search	Date of completion of the search	Examiner	
MUNICH	9 October 1995	Thiele, N	
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 94 10 5635

DOCUMENTS CONSIDERED TO BE RELEVANT				
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim		
X	DATABASE WPI Section Ch, Week 8736 Derwent Publications Ltd., London, GB; Class E13, AN 87-253949 & JP-A-62 175 735 (FUJI PHOTO FILM KK) , 1 August 1987 * abstract * ---	1-5,8-27		
X	DE-A-21 42 105 (BASF AG) 1 March 1973 * claim 6; example 5 * ---	1-5,8-27		
X	DE-A-19 49 010 (BAYER AG) 1 April 1971 Whole document ---	1-5,8-27		
A	US-A-4 724 267 (G. M. ST. GEORGE ET AL.) 9 February 1988 * claims 1-25 * ---	28-30		
A	EP-A-0 251 390 (AKZO N. V.) 7 January 1988 * claim 1 * ---	28-30		
X, P	EP-A-0 549 339 (MITSUBISHI KASEI CORPORATION; KONICA CORPORATION) 30 June 1993 * claims 1-6 * -----	1-5,8-27		
The present search report has been drawn up for all claims				
Place of search	Date of completion of the search	Examiner		
MUNICH	9 October 1995	Thiele, N		
CATEGORY OF CITED DOCUMENTS				
X : particularly relevant if taken alone	T : theory or principle underlying the invention			
Y : particularly relevant if combined with another	E : earlier patent document, but published on, or			
document of the same category	after the filing date			
A : technological background	D : document cited in the application			
O : non-written disclosure	L : document cited for other reasons			
P : intermediate document			
& : member of the same patent family, corresponding				
document				